

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

PART VI -A

WATERBODY MANAGEMENT PLAN SERIES

PEARL RIVER BASIN

LAKE HISTORY & MANAGEMENT ISSUES

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

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GENERAL INFORMATION

The Pearl River is formed by the confluence of Nanaway and Tallahaga Creeks in Neshoba County, Mississippi. It flows southward and empties into the Rigolets and Lake Borgne, Louisiana. It is approximately 444 river miles long. Major tributaries include Lobutch Creek, the Yockanookany, Strong, and Bogue Chitto Rivers. A dam at Jackson, MS, forms the Ross Barnett Reservoir. In Louisiana, the Pearl River flows through Washington and St. Tammany Parishes. It also defines a portion of the border between Louisiana and Mississippi. Historically, the Pearl River was used for commercial transportation. A remnant navigation canal with low head sills and locks are still in place. NASA's Stennis Space Center is located on the East Pearl River at the historic town of Gainesville, MS. Seven Louisiana designated natural and scenic streams lie within the Pearl River Basin: Pushepatapa Creek, Bogue Chitto River, Holmes Bayou, Bradley Slough, Wilson Slough, Morgan River and West Pearl River. Two wildlife management areas (WMA's) and one national wildlife refuge (NWR) are found in the Pearl River Basin: Old River WMA in Mississippi, Pearl River WMA in Louisiana and Bogue Chitto NWR in Louisiana. The Pearl River Basin is home to the highest concentration of aquatic species of concern in Louisiana.

The following waterbody codes are used for the Pearl River Basin in Louisiana:

MS state line to the Pearl River Navigation Canal: **90101**
E. Pearl River, Holmes Bayou to I-10: **90102**
E. Pearl River, I-10 to Lake Borgne: **90103**
Pearl River Navigation Canal, Pools Bluff to Lock 3: **90105**
Holmes Bayou, Pearl River to West Pearl River: **90106**
Pearl River, Pearl River Navigation Canal to Holmes Bayou: **90107**
West Pearl River, Headwaters to Holmes Bayou: **90201**
West Pearl River, Holmes Bayou to the Rigolets, includes east and west mouths: **90202**
Bogue Chitto, Pearl River Navigation Canal to Wilson Slough: **90203**
Pearl River Navigation Canal, Below Lock 3: **90204**
Wilson Slough, Bogue Chitto to West Pearl River: **90205**
Bradley Slough, Bogue Chitto to West Pearl River: **90206**
Middle River and West Middle River, West Pearl River to Little Lake: **90207**
Morgan Bayou, Headwater near I-10 to Middle River: **9020902**
Pushepatapa Creek, Headwaters and tributaries from Mississippi state line to Pearl River floodplain: **90301**
Bogue Lusa Creek, Headwaters to Pearl River floodplain: **90401**
Bogue Chitto: Mississippi state line to Pearl River Navigation Canal: **90501**
Big Silver Creek, Headwaters to Bogue Chitto: **90502**
Little Silver Creek, Headwaters to Bogue Chitto: **90503**
Lawrence Creek, Headwaters to Bogue Chitto: **90504**
Bonner Creek, Headwaters to Bogue Chitto: **90505**
Thigpen Creek, Headwaters to Bogue Chitto: **90506**

Impoundment

The Pearl River is impounded by a dam at Jackson, MS that forms the Ross Barnett Reservoir: <http://www.therez.ms/>. The river is not impounded in Louisiana. However, both the Pearl River and Bogue Chitto Rivers are dammed by low head sills. The sills are in place as part of the West Pearl River Navigation Canal project (WPRNC) as shown in [Appendix I-Figure 1](#). The WPRNC was authorized in 1939 and completed in 1957. The project included channelization of the Pearl River, construction of 2 low head sills and a parallel canal with 3 locks. Lastly, a spillway was placed in the canal between locks one and two. The Pools Bluff Sill (PBS) is located at the upper end of the navigation canal near river mile (RM) 48.7. It is 350 feet wide and built out of reinforced concrete. It is designed to maintain a navigable depth in the Pearl River to Bogalusa. The Bogue Chitto Sill (BCS) is located near river mile RM 44 between locks 2 and 3. It is 250 feet wide and built out of reinforced concrete. It is designed to maintain a navigable depth in the parallel canal between locks 2 and 3. This project was not designed for drawdown purposes. In 1990, a United States Army Corps of Engineers (USACE) study concluded that the project was no longer economically viable. Funding for the project was withdrawn and maintenance halted. In 2003, the project exceeded its 50 year project life and was considered for de-authorization. However, funding to initiate necessary studies was never approved. In 2005, USACE abandoned the project and ceased to operate or maintain any of the structures associated with the project. These structures include:

1. Locks 1, 2, and 3
2. Boat ramps at Pools Bluff and Lock 1
3. Boat portages at the sills.

St. Tammany and Washington Parishes have assumed maintenance responsibility of the boat ramps. However, there is no method of boat portage available at the sills. The gates at locks 1, 2 and 3 are operated on a limited basis by special request to USACE Vicksburg District Operations (601) 631-5486.

Watershed

The Pearl River watershed covers about 8,760 square miles and lies within both Mississippi and Louisiana. Elevation within the basin ranges from 350 feet above mean sea level in the northwest portion to sea level at the southern end. Land use within the basin is predominately agriculture and forestry. However, urbanization is steadily increasing.

Parishes located

Washington Parish and St. Tammany Parish

Border Waters

The Pearl River Basin in Louisiana is bordered on the north by the Pearl River at the Mississippi state line and on the west and south by the Lake Pontchartrain Basin.

Water Authority

The Louisiana Department of Natural Resources has authority over all surface water withdrawals for commercial purposes as per the Surface Water Management Act - La. R S 30:961-963 (Act 955 of the 2010 legislative session).

<http://dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=92>

Associations

There are non-governmental organizations which actively participate in Pearl River Basin issues. Groups like the Lake Pontchartrain Basin Foundation, Louisiana Audubon Council, Sierra Club, and the Nature Conservancy often review and comment on management issues. These issues include navigation, flood control, pollution, and aquatic species management. In 2003, the Pearl River Fishway LLC was formed to study the feasibility of a fish passage at Pools Bluff Sill. A PDF copy of their 2004 technical report is available upon request from Dr. Barry Kohl at (504) 861-8465.

Authorization

The State of Louisiana has authority over the state-owned water bottoms of the Pearl River and its significant tributaries within the state. The laws governing Natural and Scenic River Systems regulate some land practices along the river and also protect the river from hydrologic alterations. The Louisiana Department Wildlife and Fisheries (LDWF) regulates fisheries in all public waters that drain the Pearl River watershed in Louisiana, including the Bogue Chitto River where it flows through the National Wildlife Refuge.

Access

Boat Ramps in Louisiana: Appendix - Figures 2, 3, 4 and 5)

1. Hwy 10 Bridge in Bogalusa (Figure 2)
2. Richardson Landing in Bogalusa (Figure 2)
3. Pools Bluff Launch: (Figure 2)
4. Lock #3 Launch (Figure 3)
5. Fisherman's Landing (Figure 3)
6. Lock #2 Launch (Figure 3)
7. Lazy J Campground (Figure 3)
8. Lock #1 Launch 1 (Figure 4)
9. Lock #1 Launch 2 (Figure 4)
10. Hwy 59 Launch (Figure 5)
11. Davis Landing (Figure 5)
12. Crawford's Landing (Figure 5)
13. Indian Village (Figure 5)
14. Hwy 90 Middle River Launch (Figure 5)
15. Hwy 90 E. Pearl River Launch (Figure 5)

Boat docks

There are small boat docks available at the Hwy 90 Launch at East Pearl River.

State/Federal facilities

1. Bogue Chitto NWR (US Fish and Wildlife Service)
<http://www.fws.gov/boguechitto/>
2. Old River WMA (Mississippi Dept. of Wildlife, Fisheries, and Parks - MDWFP)
<http://www.mdwfp.com/wildlife-hunting/wmas/southwest-region/old-river.aspx>
3. Pearl River WMA (LDWF)
<http://www.wlf.louisiana.gov/wma/2789>
4. NASA's Stennis Space Center
<http://www.nasa.gov/centers/stennis/home/index.html>

State/National Parks

Bogue Chitto State Park: <http://www.crt.state.la.us/parks/iboguechitto.aspx>

Shoreline Development

Shoreline development by landowners

The Pearl River actively meanders within the floodplain. This tends to limit shoreline development. The river is no longer dredged and commercial shipping has ceased. Sand and gravel mining does take place in the floodplain. In Louisiana, these operations are permitted and regulated by the Louisiana Department of Environmental Quality (LDEQ).

<http://www.deq.louisiana.gov/portal/>

The link below describes land use practices within the Mississippi portion of the Pearl River watershed. [Pearl River Basin Citizen's Guide](#)

Shoreline development consists of residential homes, camps and houseboats.

Physical Description of River

Shoreline length

Approximately 880 miles

Timber / Vegetation Type

Habitat in the Pearl River watershed includes pine forests, bottomland hardwoods and cypress-tupelo swamps. Aquatic habitat includes both fresh and brackish marsh as the waters of the Pearl River approach the coastline.

Natural seasonal water fluctuation

The Pearl River Basin drains approximately 8,760 square miles. Rainfall within the drainage greatly affects the water level. Discharge from Ross Barnett Reservoir, MS also affects water levels in the Pearl River. Seasonal fluctuation may vary from several feet to over 20 feet following an extensive rainfall event.

Events / Problems

Navigation Channel Construction

The U.S. Army Corps of Engineers (USACE) project “Pearl River Navigation Channel” has significantly impacted habitat within the basin. The placement of 2 low head sills and a navigation canal with 3 locks have altered the historic migration routes and the life cycle of 18 fish species, including the gulf sturgeon and Alabama shad (Table 1). The sills also restrict access and are hazardous to boaters. In recent years the rail car, boat portage system at Pools Bluff sill has been inoperable. In February 2012, the only functioning means of boat portage at the Bogue Chitto sill was removed by USACE. This followed an accident with 2 fatalities at the site.

Table 1. Migratory Fish in the Pearl River Basin from Kohl (2004).

Status	Common Name	Scientific Name
Anadromous		
	Alabama shad	<i>Alosa alabamae</i>
	Atlantic Needlefish	<i>Strongylura marina</i>
	Gizzard shad	<i>Dorosoma cepedianum</i>
	Gulf sturgeon	<i>Acipenser oxyrinchus desotoi</i>
	Hogchoker	<i>Trinectes maculata</i>
	Striped bass	<i>Morone saxatilis</i>
	Skipjack herring	<i>Alosa chrysochloris</i>
	Threadfin shad	<i>Dorosoma petenense</i>
Catadromous	American eel	<i>Anguilla rostrata</i>
Potamodromous		
	Blacktail redhorse	<i>Moxostoma poecilurum</i>
	Blue catfish	<i>Ictalurus furcatus</i>
	Channel catfish	<i>Ictalurus punctatus</i>
	Flathead catfish	<i>Pylodictis olivaris</i>
	Highfin carpsucker	<i>Carpionodes velifer</i>
	Paddlefish	<i>Polyodon spatula</i>
	Pearl darter	<i>Percina aurora</i> (extirpated)
	Quillback	<i>Carpionodes cyprinus</i>
	River redhorse	<i>Moxostoma carinatum</i>
	Southeastern blue sucker	<i>Cycleptus meridionalis</i>
	Spotted sucker	<i>Minytrema melanops</i>

Fish Kill

In August 2011, an unauthorized discharge from the paper mill in Bogalusa caused a fish and mussel kill in the Pearl River from Bogalusa to Hwy 90 in St. Tammany Parish. District 8 personnel assisted LDEQ and cooperated with MDEQ, USFWS, MDWFP and LDWF enforcement agents conducting a field investigation of the incident. LDWF biologists and senior technical advisors produced the report “Pearl River – Temple Inland Incident 2011”.

Aquatic Vegetation

There are currently no major issues with aquatic vegetation in the Pearl River. In 2011, a small accumulation of giant salvinia was found at the Lock 1 Boat Ramp in the PRNC. The majority of plant material was physically removed and several tank mixed applications of glyphosate and surfactant were made to the area. Booms were placed around the affected area to prevent the plant from spreading. Bimonthly monitoring trips were made over the following 6 months and no giant salvinia was found. Monitoring for the plant was reduced to once monthly. To date no giant salvinia has been found in the area.

MANAGEMENT ISSUES

Aquatic Vegetation

Treatment history by year on file

Biological

An experimental release of common salvinia weevils (*Cyrtobagous salviniae*) was made at a single location in 2008 (Figure 1). This site is considered the uppermost occurrence of common salvinia in the Pearl River Basin in Louisiana. Plant material collected locally was infested with common salvinia weevils from Florida and transplanted into the area. No estimates of weevil numbers were made.

Chemical

The chemical treatment of aquatic vegetation in the Pearl River basin from 2008 – 2014 is detailed in Tables 2 and 3 including year, vegetation, herbicide used, and acreage sprayed for control.

Table 2. Area of aquatic vegetation treated by year 2008 – 2014.

Year	Vegetation	Acres (treated)
2008	Primrose	4.24
	Salvinia, Common	218.29
	Sedge	12.30
	Spatterdock	10.17
	Torpedo Grass	25.63
	Water Hyacinth	129.95
2008 total		400.58
2009	Alligatorweed	32.12
	Salvinia, Common	298.10
	Water Hyacinth	219.56
2009 total		563.43
2010	Alligatorweed	47.71
	Duckweed	33.43
	Salvinia, Common	332.79
	Water Hyacinth	266.10
2010 total		680.03
2011	Salvinia, Common	218.29
	Sedge	12.30
	Spatterdock	10.17
	Torpedo Grass	25.63
	Water Hyacinth	129.95
2011 total		396.34
2012	Alligator Weed	15
	Pennywort	8
	Primrose	15
	Common Salvinia	233
	Torpedo Grass	3
	Water hyacinth	97

	Duckweed	15
	Cut grass	7
2012 Total - 392		
2013	Alligatorweed	30.39
	Water Hyacinth	71.74
	Primrose	4.75
	Salvinia, Common	67.02
	Torpedo Grass	0.23
	Duckweed	14.3
2013 Total - 209		
2014	Alligatorweed	36.89
	Pennywort	5
	Primrose	25.43
	Salvinia, Common	46.81
	Torpedo Grass	4.67
	Sedge	3.99
2014 Total - 124		

Table 3. Herbicide used to treat aquatic nuisance vegetation by year for 2008–2014.

Year	Chemical	Amount sprayed (gal)	Acres (treated)
2008	2,4-D	55	110
	Aquamaster	73.5	106.8
	Aquastar	30.6	27
	Reward	88.5	117.42
	Diquat E Pro2L	13	17.29
2009	2,4-D	79	158
	Aquamaster	94	126.9
	Diquat E Pro2l	66	88.9
	Knockout	117	155.75
2010	2,4-D	110	220
	Aquamaster	122.5	163.97
	Knockout	249	333.6
	Clearcast	1	4
2011	Aquamaster	64.5	87
	Knockout	102	137.57
2012	2,4-D	29	58
	Aquamaster	89	118
	Tribune	175	231
2013	Platoon	42.5	85
	Aqua Master	38.5	54.25
	Tribune	81.75	104.5

2014	Clearcast	16	32
	Round-Up Custom	37.5	49.93
	Tribune	12.5	16.6
	Weedestroy AM-40	12.5	25

Type map

No vegetative type map sampling has been conducted on the Pearl River.

History of Regulations

LDWF administers the Louisiana Natural and Scenic Rivers System, established in 1970 for the purpose of preserving, developing, reclaiming and enhancing the wilderness qualities, scenic beauty and ecological regime of designated free-flowing water bodies. A natural and scenic river as defined by Louisiana Revised Statute 56:1845 is a river, stream, or bayou that is in a free-flowing condition and has not been channelized, cleared or snagged within the past 25 years, realigned, inundated or otherwise altered, has a shoreline covered by native vegetation and has no or few manmade structures along its banks. LDWF considers the following factors for each stream: fish and wildlife habitat, typical fish and wildlife species, protected/rare/endangered/ threatened species (PRETS), geological/hydrological features, water quality, historical/archaeological, wilderness quality/scenic value and recreation (Herring et al. 1995).

The main stem of the Pearl River in Louisiana is not designated a Natural and Scenic River. However, Louisiana Revised Statute 56:1847 designates several tributaries, distributaries and remnant river channels within the basin as Natural and Scenic Rivers. These include Pushepatapa Creek, Bogue Chitto River, Holmes Bayou, Bradley Slough, Wilson Slough, Morgan River and West Pearl River. Also, Louisiana Revised Statute 56:404 prohibits the use of seines, nets, webbing and hand grabbing of fish in the Bogue Chitto River. Additional recreational and commercial fishing regulations as they may pertain to the Pearl River Basin can be viewed at the Louisiana Department of Wildlife and Fisheries website at the links provided below.

Recreational fishing regulations: <http://www.wlf.louisiana.gov/fishing/regulations>

Commercial Fishing Regulations: <http://www.wlf.louisiana.gov/fishing/regulations>

Fish kills

A major fish and mussel kill occurred in the Pearl River in August 2011. Complete details concerning this event are covered in the final report: Investigation of a Fish and Mollusk Kill in the lower Pearl River, Louisiana and Mississippi, August 2011. In 2005 Hurricane Katrina caused a severe fish kill. Local witnesses reported seeing massive rafts of dead fish and mussels floating downstream following the storm. However, no official investigations or reports were made. Results from LDWF biological sampling after Hurricane Katrina indicate the LMB population was affected but quickly recovered. In August 1992 a fish kill occurred in Bogalusa Creek as a result of an accidental discharge from the mill owned by Gaylord Container Corporation.

Contaminants / Pollution

The following fish consumption (Table 5 and 6) and swimming advisories can be found on the Department of Environmental Quality/Mercury Initiative website:

<http://www.deq.louisiana.gov/portal/default.aspx?tabid=1631>

Table 5. Fish consumption advisory for the Pearl River, Louisiana 2011.

Pearl River	Mercury	Advisory fish consumption	57 miles-	Issued: 3/1/97 Revised: 5/29/03
LA090101_00 LA090102_00 LA090103_00 LA090105_00 LA090106_00 LA090107_00 LA090201_00 LA090202_00 LA090202-5126 LA090204_00 LA090205_00 LA090206_00 LA090207_00 LA090207-5112 (Washington, St. Tammany)		<p>Women of childbearing age and children less than seven years of age SHOULD NOT CONSUME BOWFIN (choupique, grinnel) and should consume no more than ONE MEAL PER MONTH of bass (all species), bigmouth buffalo, or freshwater drum combined from the advisory area.</p> <p>Other adults and children seven years of age and older SHOULD NOT CONSUME BOWFIN (choupique, grinnel) and should consume no more than FOUR MEALS PER MONTH of bass (all species), bigmouth buffalo, or freshwater drum combined from the advisory area.</p> <p>Unless the fish species is specifically addressed in the details of the advisory, please limit consumption of all species in an advisory area to FOUR MEALS PER MONTH.</p>	This advisory includes the entire Pearl River	

Table 6. Fish consumption advisory for the Bogue Chitto River, Louisiana 2011.

Bogue Chitto River	Mercury	Advisory fish consumption	35 miles-	Issued: 8/96 Revised: 5/29/03
LA090501_00 LA090203_00 (Washington, St. Tammany)		<p>Women of childbearing age and children less than seven years of age should consume no more than ONE MEAL PER MONTH of bass (all species) or bowfin (choupique, grinnel) combined from the advisory area.</p> <p>Other adults and children seven years of age and older should consume no more than FOUR MEALS PER MONTH of bass (all species) or bowfin (choupique, grinnel) combined from the advisory area.</p> <p>Unless the fish species is specifically addressed in the details of the advisory, please limit consumption of all species in an advisory area to FOUR MEALS PER MONTH.</p>	From the MS/LA state line to the Pearl River Navigation Canal	

Water quality

For complete details of LDEQ water quality descriptions for the Pearl River please follow the links below:

[LDEQ 303\(d\) List](#)

<http://www.deq.louisiana.gov/portal/>

Water level

Water level data was provided by the United States Geological Survey (USGS) and can be found at the following website: http://waterdata.usgs.gov/usa/nwis/uv?site_no=02489500

Biological

Fish samples

Note: All standardized sampling data collected by Inland Fisheries from 1965 through present are computerized. Any data prior to 1965 in the form of paper documents or reports are listed below:

Pre 1965 - NONE

A history of sampling efforts, past, present and future is presented in Table 7.

Biological sampling for the Pearl River was scheduled for three consecutive years (2012 – 2014). This was in response to the Temple Inland Fish Kill Incident of August 2011. A complete description of the post incident monitoring protocol can be found in [Appendix II](#).

Four additional samples were taken in the 10.77 mile portion of the Pearl River navigation canal between lock #1 and lock #2 to assess fishery community structure, abundance and condition.

In preparation for the proposed Washington Parish Reservoir ([Appendix III](#), Figure 1.) six, 100 meter backpack electrofishing samples were performed in 2014 to establish a baseline data set for fish community on the Bogue Lusa creek. These samples were repeated in 2015, with the addition of two sites located upstream from the proposed project ([Appendix III](#), Figure 2).

Table 7. Historical, current, and future standardized sampling history in the Pearl River Basin, Louisiana from 1990 till 2014.

	PEARL RIVER FISH SAMPLING
1990	Electrofishing – 4-15 minute samples (spring), 2- 15 minute samples (fall)
1994	Electrofishing – 4-15 minute samples (spring), 5-15 minute samples (fall), 2- 7.5 minute forage samples (fall)
	Gill nets 11- 12 hour samples
1998	Seine 4 – 50 feet samples (summer) 2-frame or wing nets samples (summer)
1999	Electrofishing – 8-15 minute samples (summer), 4- 15 minute samples (fall) 21- 12 hour gill net samples
	Electrofishing – 2-15 minute samples (spring)
2000	7- 15 minute samples (summer) 2- 15 minute samples (winter) 23-12 hour gill net samples
2001	Gill nets 10- 12 hour samples
2003	Electrofishing – 4-15 minute samples (spring)
2006	Electrofishing – 16-15 minute samples (spring), 8- 15 minute samples (fall), 1- 7.5 minute forage samples (spring)
2007	Electrofishing – 6-15 minute samples (fall)

2008	Electrofishing – 4-15 minute samples (fall)
2009	Electrofishing – 8-15 minute samples (spring), 12- 15 minute samples (fall), 4- 15 minute samples (winter), 3- 7.5 minute forage samples (fall) Seine 4 – 50 feet samples (summer) 2-lead net samples (spring) 2- hoop net samples (spring)
2012	<u>Pearl River Post Incident Monitoring</u> 7-15 minute electrofishing samples 7-72 hour hoop net samples 7-night seines - 25 ft X 6 ft X 3/16” mesh with 6 ft bag, 2 - 50 foot hauls on point bar 3- night seines - 10 ft. X 6 ft. X 3/16” mesh, 15 minute kick seine technique conducted in tributaries 16 - Freshwater mussel samples collected at 8 stations, 8 samples > meter and 8 samples < meter
2013	<u>Pearl River Post Incident Monitoring</u> 7-15 minute electrofishing samples 7-72 hour hoop net samples 7-night seines - 25 ft X 6 ft X 3/16” mesh with 6 ft bag, 2 - 50 foot hauls on point bar 3- night seines - 10 ft. X 6 ft. X 3/16” mesh, 15 minute kick seine technique conducted in tributaries 16 - Freshwater mussel samples collected at 8 stations, 8 samples > meter and 8 samples < meter
2014	<u>Pearl River Post Incident Monitoring</u> 7-15 minute electrofishing samples 7-72 hour hoop net samples 7-night seines - 25 ft X 6 ft X 3/16” mesh with 6 ft bag, 2 - 50 foot hauls on point bar 3- night seines - 10 ft. X 6 ft. X 3/16” mesh, 15 minute kick seine technique conducted in tributaries 16 - Freshwater mussel samples collected at 8 stations, 8 samples > meter and 8 samples < meter <u>Pearl River Navigation Canal</u> 4-15 minute electrofishing samples <u>Bogue Lusa Creek</u> 6-100 meter backpack electrofishing samples
2015	<u>Bogue Lusa Creek</u> 8-100 meter backpack electrofishing samples
2018	<u>Pearl River Fish and Mussel Assemblage Samples</u> 11-15 minute electrofishing samples 7-night seines - 25 ft X 6 ft X 3/16” mesh with 6 ft bag, 2 - 50 foot hauls on point bar 3- night seines - 10 ft. X 6 ft. X 3/16” mesh, 15 minute kick seine technique conducted in tributaries 16 - Freshwater mussel samples collected at 8 stations, 8 samples > meter and 8 samples < meter

Stocking history

The stocking history (Table 8) below shows LDWF historic fish stocking in the Pearl River, Louisiana. LDWF, in cooperation with the Gulf States Marine Fisheries Commission

(GSMFC), has stocked striped bass and Gulf strain striped bass in the Pearl River, Louisiana. Furthermore, LDWF stocked Florida largemouth bass, bluegill and redear sunfish following Hurricane Katrina. Recent stocking efforts have focused on helping fish populations recover following the 2011 fish kill.

Table 8. The Louisiana Department of Wildlife and Fisheries stocking history in the Pearl River, Louisiana, from 2001 – 2012.

Date	Species	Size	Total
2001	Striped Bass	Fingerlings	15,000
2003	Gulf Striped Bass	Phase II	53,768
2004	Striped Bass	Phase II	7,796
2005	Florida Largemouth Bass	Phase II	2,500
	Gulf Striped Bass	Phase II	1,630
2006	Bluegill	Fingerlings	23,336
	Redear Sunfish	Fingerlings	47,232
	Florida Largemouth Bass	Fingerlings	100,133
	Florida Largemouth Bass	Phase II	500
	Gulf Striped Bass	Phase II	2,450
2008	Bluegill	Fingerlings	15,734
	Florida Largemouth Bass	Fingerlings	54,720
	Florida Largemouth Bass	Phase II	866
2009	Gulf Striped Bass	Phase II	4,601
2011	Bluegill	Fingerlings	24,276
	Channel Catfish	Fingerlings	26,907
2012	Northern Largemouth Bass	Fingerlings	65,894
	Bluegill	Fingerlings	255,125

Species profile

The Pearl River Basin contains the greatest aquatic species diversity in Louisiana (LDWF 2005). An extensive fish species list for the Pearl River is available in Ross et al. (2001) - Table 9.

Table 9. Fishes of the Pearl River in Mississippi and Louisiana (Ross et al. 2001)

Species	Species (continued)
<i>Cynoscion nebulosus</i>	<i>Ictiobus bubalus</i>
<i>Leiostomus xanthurus</i>	<i>Minytrema melanops</i>
<i>Paralichthys lethostigma</i>	<i>Moxostoma carinatum</i> *
<i>Trinectes maculatus</i>	<i>Moxostoma poecilurum</i>
<i>Etheostoma fusiforme</i>	<i>Bagre marinus</i>
<i>Etheostoma gracile</i>	<i>Ameiurus melas</i>
<i>Etheostoma histrio</i>	<i>Ameiurus natalis</i>
<i>Etheostoma kennicotti</i>	<i>Ameiurus nebulosus</i>
<i>Etheostoma lynceum</i>	<i>Ictalurus furcatus</i>
<i>Etheostoma parvipinne</i>	<i>Ictalurus punctatus</i>

<i>Etheostoma proeliare</i>	<i>Noturus funebris</i>
<i>Etheostoma stigmaeum</i>	<i>Noturus gyrinus</i>
<i>Etheostoma swaini</i>	<i>Noturus leptacanthus</i>
<i>Etheostoma histrio</i>	<i>Noturus miurus</i>
<i>Percina aurora*</i>	<i>Noturus munitus*</i>
<i>Percina lenticula</i>	<i>Noturus nocturnus</i>
<i>Percina maculata</i>	<i>Noturus phaeus</i>
<i>Percina nigrofasciata</i>	<i>Pylodictis olivaris</i>
<i>Percina sciera</i>	<i>Esox americanus</i>
<i>Percina shumardi</i>	<i>Esox niger</i>
<i>Percina suttkusi*</i>	<i>Notropis chalybaeus</i>
<i>Percina vigil</i>	<i>Notropis longirostris</i>
<i>Stizostedion canadense</i>	<i>Notropis maculatus</i>
<i>Sander vitreus</i>	<i>Notropis shumardi</i>
<i>Aplodinotus grunniens</i>	<i>Notropis texanus</i>
<i>Elassoma zonatum</i>	<i>Notropis volucellus</i>
<i>Eucinostomus argenteus</i>	<i>Notropis winchelli</i>
<i>Gobionellus shufeldti</i>	<i>Opsopoeodus emiliae</i>
<i>Gobiosoma bosc</i>	<i>Pimephales notatus</i>
<i>Microgobius gulosus</i>	<i>Pimephales promelas</i>
<i>Morone saxatilis</i>	<i>Pimephales vigilax</i>
<i>Ammocrypta beani</i>	<i>Pteronotropis signipinnis</i>
<i>Ammocrypta vivax</i>	<i>Pteronotropis welaka</i>
<i>Crystallaria asprella</i>	<i>Semotilus atromaculatus</i>
<i>Etheostoma chlorosomum</i>	<i>Carpiodes cyprinus</i>
<i>Syngnathus scovelli</i>	<i>Carpiodes velifer</i>
<i>Oligoplites saurus</i>	<i>Cycleptus meridionalis</i>
<i>Ambloplites ariommus</i>	<i>Erimyzon oblongus</i>
<i>Centrarchus macropterus</i>	<i>Erimyzon sucetta</i>
<i>Lepomis cyanellus</i>	<i>Erimyzon tenuis</i>
<i>Lepomis gulosus</i>	<i>Hypentelium nigricans</i>
<i>Lepomis humilis</i>	<i>Anchoa mitchilli</i>
<i>Lepomis macrochirus</i>	<i>Carassius auratus</i>
<i>Lepomis marginatus</i>	<i>Cyprinella camura</i>
<i>Lepomis megalotis</i>	<i>Cyprinella venusta</i>
<i>Lepomis microlophus</i>	<i>Cyprinus carpio</i>
<i>Lepomis miniatus</i>	<i>Ericymba buccata</i>
<i>Lepomis symmetricus</i>	<i>Hybognathus hayi</i>
<i>Micropterus punctulatus</i>	<i>Hybognathus nuchalis</i>
<i>Micropterus salmoides</i>	<i>Luxilus chrysocephalus</i>
<i>Pomoxis annularis</i>	<i>Lythrurus roseipinnis</i>
<i>Pomoxis nigromaculatus</i>	<i>Macrhybopsis aestivalis</i>
<i>Aphredoderus sayanus</i>	<i>Macrhybopsis storeriana</i>
<i>Mugil cephalus</i>	<i>Nocomis leptcephalus</i>
<i>Strongylura marina</i>	<i>Notemigonus crysoleucas</i>

<i>Cyprinodon variegatus</i>	<i>Notropis atherinoides</i>
<i>Fundulus catenatus</i>	<i>Ichthyomyzon castaneus</i>
<i>Fundulus chrysotus</i>	<i>Ichthyomyzon gagei</i>
<i>Fundulus dispar</i>	<i>Lampetra aepyptera</i>
<i>Fundulus grandis</i>	<i>Acipenser oxyrinchus desotoi</i> *
<i>Fundulus jenkinsi</i> *	<i>Polyodon spathula</i>
<i>Fundulus notatus</i>	<i>Lepisosteus oculatus</i>
<i>Fundulus nottii</i>	<i>Lepisosteus osseus</i>
<i>Fundulus olivaceus</i>	<i>Amia calva</i>
<i>Fundulus pulvereus</i>	<i>Hiodon tergisus</i>
<i>Lucania parva</i>	<i>Anguilla rostrata</i>
<i>Gambusia affinis</i>	<i>Alosa alabamiae</i>
<i>Heterandria formosa</i>	<i>Alosa chrysochloris</i>
<i>Poecilia latipinna</i>	<i>Brevoortia patronus</i>
<i>Labidesthes sicculus</i>	<i>Dorosoma cepedianum</i>
<i>Menidia beryllina</i>	
* species of special concern in Louisiana	

Table 10. Mussel species of the Pearl River, Louisiana (Jones et al. 2005; Vidrine 1993)

Scientific Name	Common Name
<i>Unio merus declivis</i>	Tapered Pondhorn
<i>Pleurobema beadleianum</i>	Mississippi Pigtoe
<i>Unio merus tetralasmus</i>	Pondhorn
<i>Arcidens confragosus</i>	Rock Pocketbook
<i>Lasmigona complanata</i>	White Heelsplitter
<i>Glebulia rotunda</i>	Round Pearlshell
<i>Lampsilis teres</i>	Yellow Sandshell
<i>Quadrula quadrula</i>	Mapleleaf
<i>Plectomerus dombeyanus</i>	Bankclimber
<i>Quadrula apiculata</i>	Southern Mapleleaf
<i>Elliptio crassidens</i>	Elephant-ear
<i>Quadrula refulgens</i>	Purple Pimpleback
<i>Tritogonia verrucosa</i>	Pistolgrip
<i>Utterbackia imbecillis</i>	Paper Pondshell
<i>Pyganodon grandis</i>	Giant Floater
<i>Lampsilis claibornensis</i>	Southern Fatmucket
<i>Villosa lienosa</i>	Little Spectaclecase
<i>Corbicula fluminea</i>	Asiatic Clam
<i>Fusconaia ebena</i>	Ebonys shell
<i>Truncilla donaciformis</i>	Fawnsfoot
<i>Ligumia subrostrata</i>	Pondmussel
<i>Fusconaia cerina</i>	Gulf Pigtoe
<i>Obliquaria reflexa</i>	Threehorn – Wartyback
<i>Leptodea fragilis</i>	Fragile Papershell
<i>Potamilus purpuratus</i>	Bleufer
<i>Potamilus inflatus</i>	Inflated Heelsplitter**
<i>Elliptio arca</i>	Alabama Spike

<i>Obovaria unicolor</i>	Alabama Hickorynut
**USFWS Threatened species	

Genetics

Florida largemouth bass have been introduced into the Pearl River. Sampling to determine stocking success and subsequent influence was not conducted.

Threatened/endangered/exotic species

The highest concentration of aquatic species of conservation concern in Louisiana is found in the Pearl River Basin (LDWF 2005). Table 11 lists those crustaceans, freshwater fish, mussels and reptiles which are of concern according to LDWF.

Table 11. Pearl River Basin Aquatic Species of Conservation Concern (LDWF 2005)

Crustaceans	Freshwater Fish	Mussels	Reptiles
Ribbon Crawfish	Gulf Sturgeon	Rayed Creekshell	Alligator Snapping Turtle
Plain Brown Crawfish	Paddlefish	Elephant - Ear	Ringed Mapped Turtle
Flatwoods Digger	Alabama Shad	Mississippi Pigtoe	Pascagoula Map Turtle
	Flagfin Shiner	Inflated Heelsplitter	Mississippi Diamond-backed Terrapin
	Bluenose Shiner	Southern Rainbow	Stripe-necked Musk Turtle
	Longjaw Minnow		
	River Redhorse		
	Frecklebelly Madtom		
	Crystal Darter		
	Channel Darter		
	Freckled Darter		
	Pearl Darter		
	Gulf Logperch		

Hydrological changes

The WPRNC was completed in 1957 and included the construction of a shipping canal with 3 locks, the placement of 2 low head sills, and channelization of the river up to Bogalusa, La. The low head sills were placed in the Pearl River at Pools Bluff, and the Bogue Chitto River near Fisherman's landing. Lastly, a spillway was installed between locks 1 and 2 to maintain the water within the canal. The Pearl River was later impounded at Jackson, MS in 1965 to form the Barnett Reservoir. The reservoir initially served to provide both recreation and a drinking water supply for Jackson. However, the reservoir has also been used for flood control purposes since the flood of 1979.

Water use

Hunting

The Pearl River Basin is home to the Bogue Chitto NWR, Old River WMA and the Pearl River WMA. These designated areas provide public hunting opportunity for small game, big game and waterfowl.

Fishing

The Pearl River is popular for both freshwater and saltwater fishing. Spotted bass and longear sunfish are often targeted in the upper reaches of the river. Largemouth bass, catfishes, and crappies are targeted in the lower reaches. Spotted sea trout, redfish and other marine species are targeted at the mouth of the river. Commercial fisheries include alligator gar, blue catfish, channel catfish, crawfish and blue crab.

Trapping

Alligator trapping occurs on private land and via lottery on Pearl River WMA in Louisiana.

Skiing

The Pearl River Navigation Canal between Lock 1 and Lock 2 is a popular destination for recreational boaters and skiers.

Scuba Diving

The Pearl River is not generally used for scuba diving. The water visibility is low and boat traffic is heavy.

Swimming

People generally swim on sandbars in upper reaches of the river. Occasionally people swim from docks associated with camps.

Irrigation

Water withdrawals are prohibited, except for withdrawals made by riparian land owners for residential purposes only (LAC Title 76: Part IX 117).

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APPENDIX I

[\(click here to return\)](#)

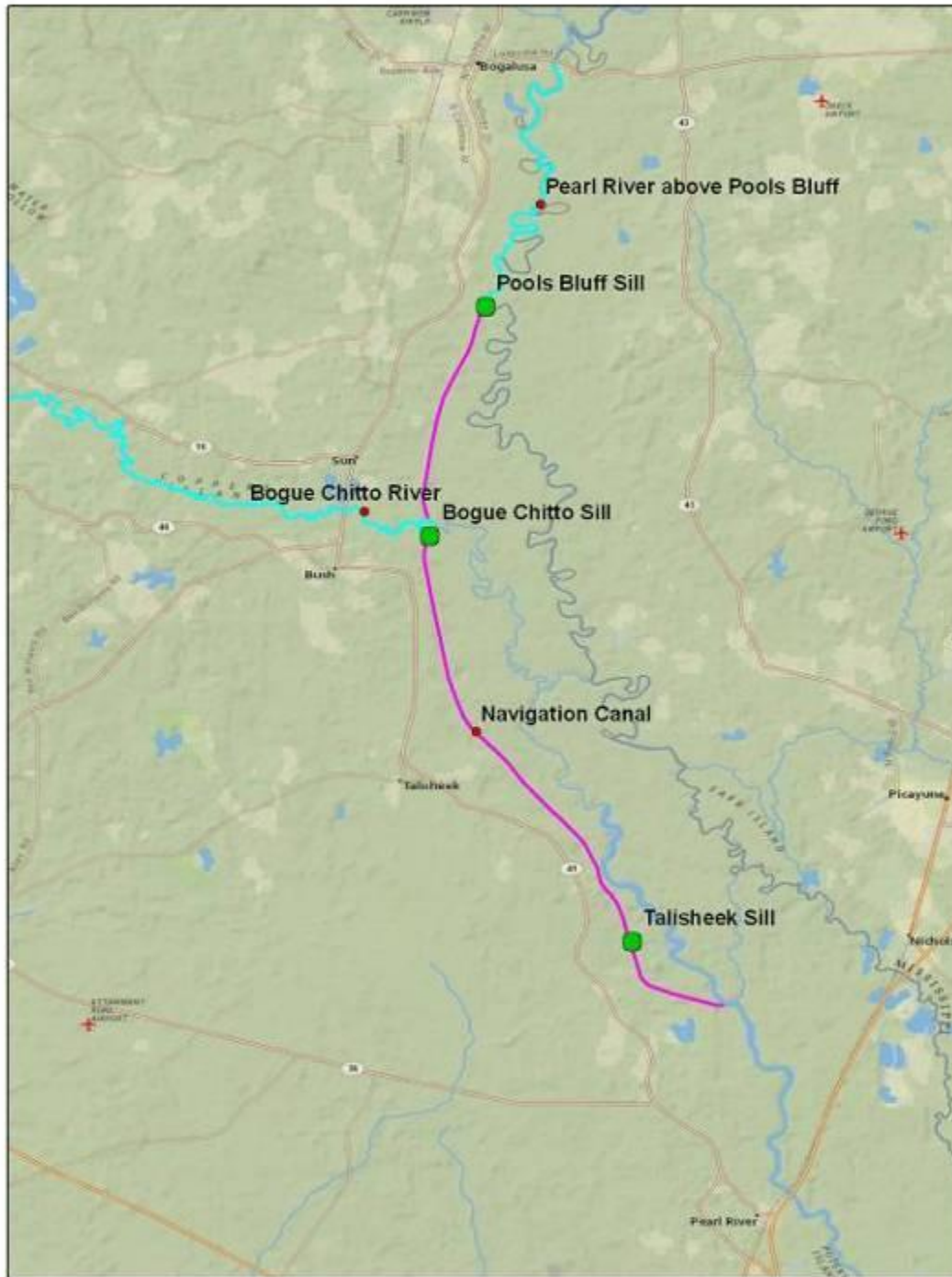


Figure 1. West Pearl River Navigation Project.

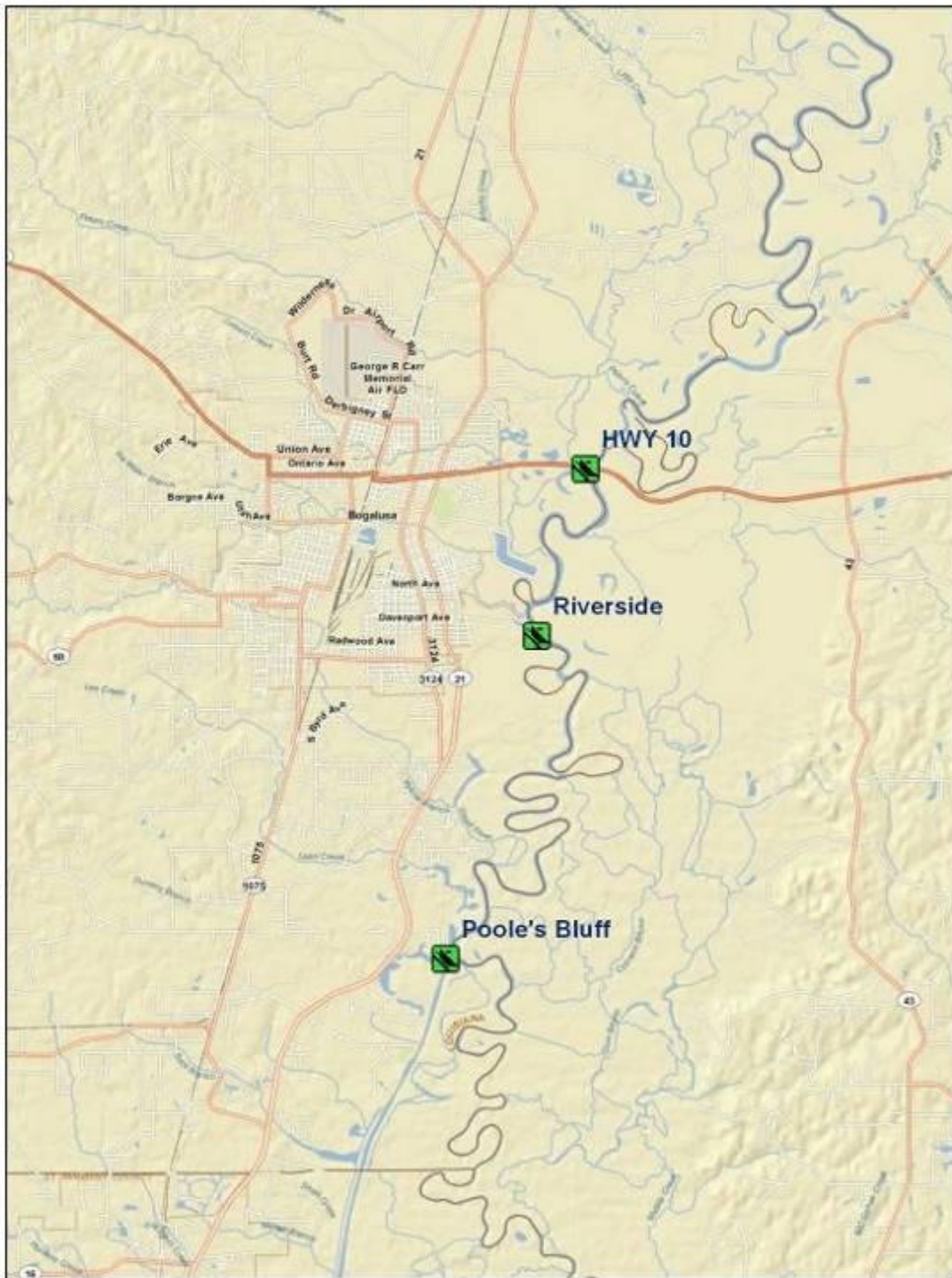


Figure 2. Location of Launches at Hwy 10, Riverside Drive and Poole's Bluff.

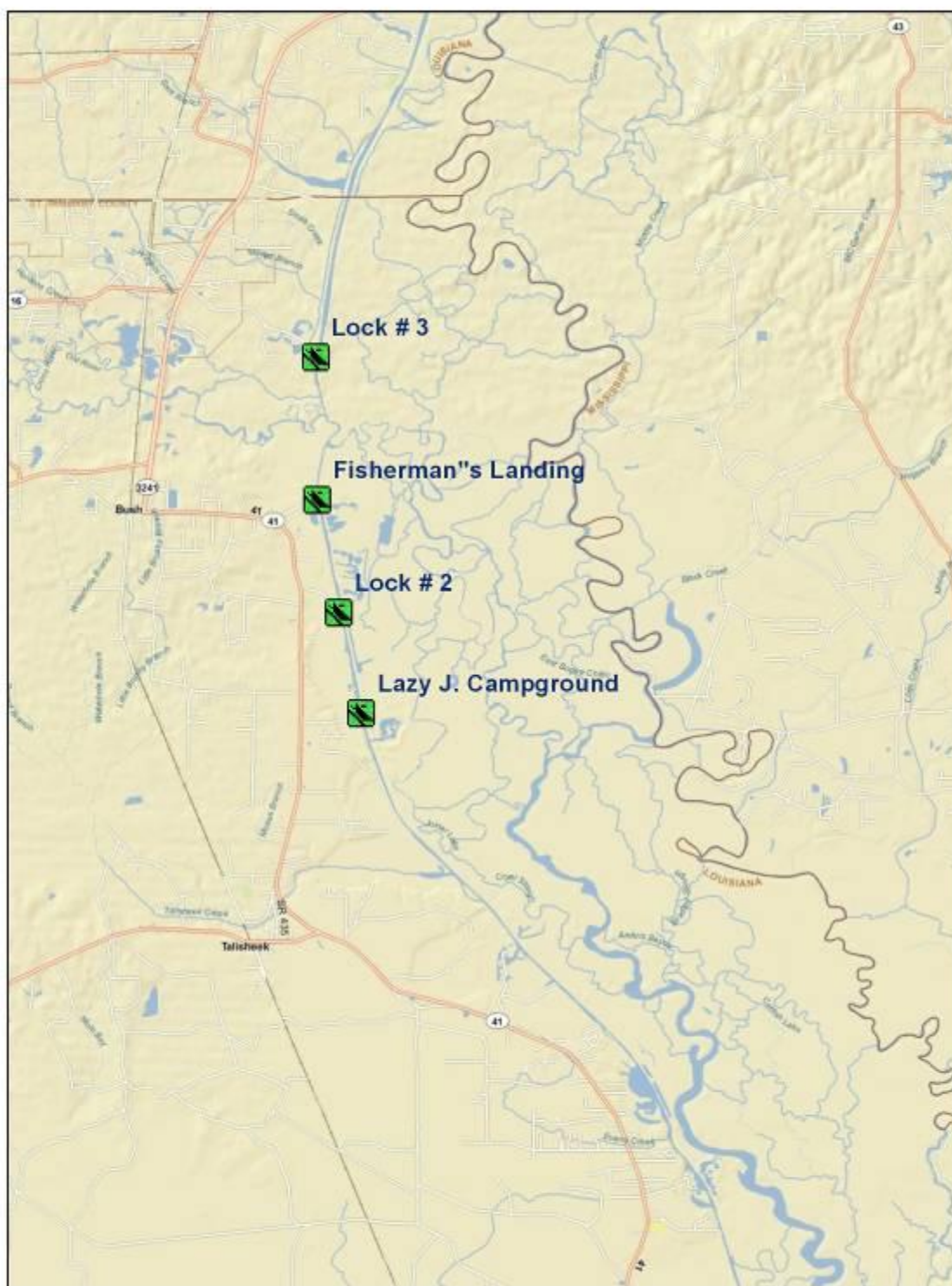


Figure 3. Location of launches at Lock #3, Fisherman's Landing, Lock #2 and Lazy J.

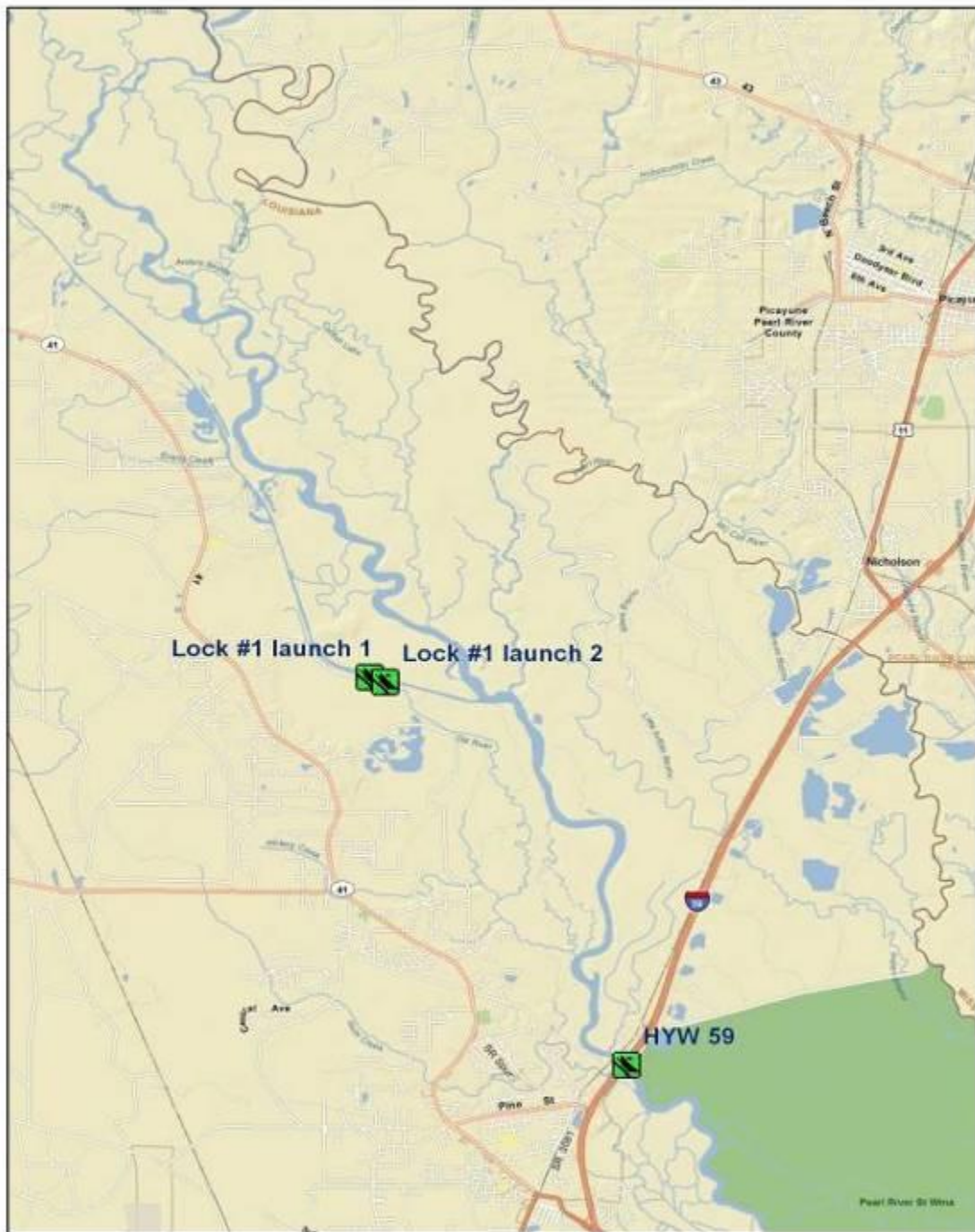


Figure 4. Location of Launches 1 and 2 at Lock #1 and at Hwy 59.

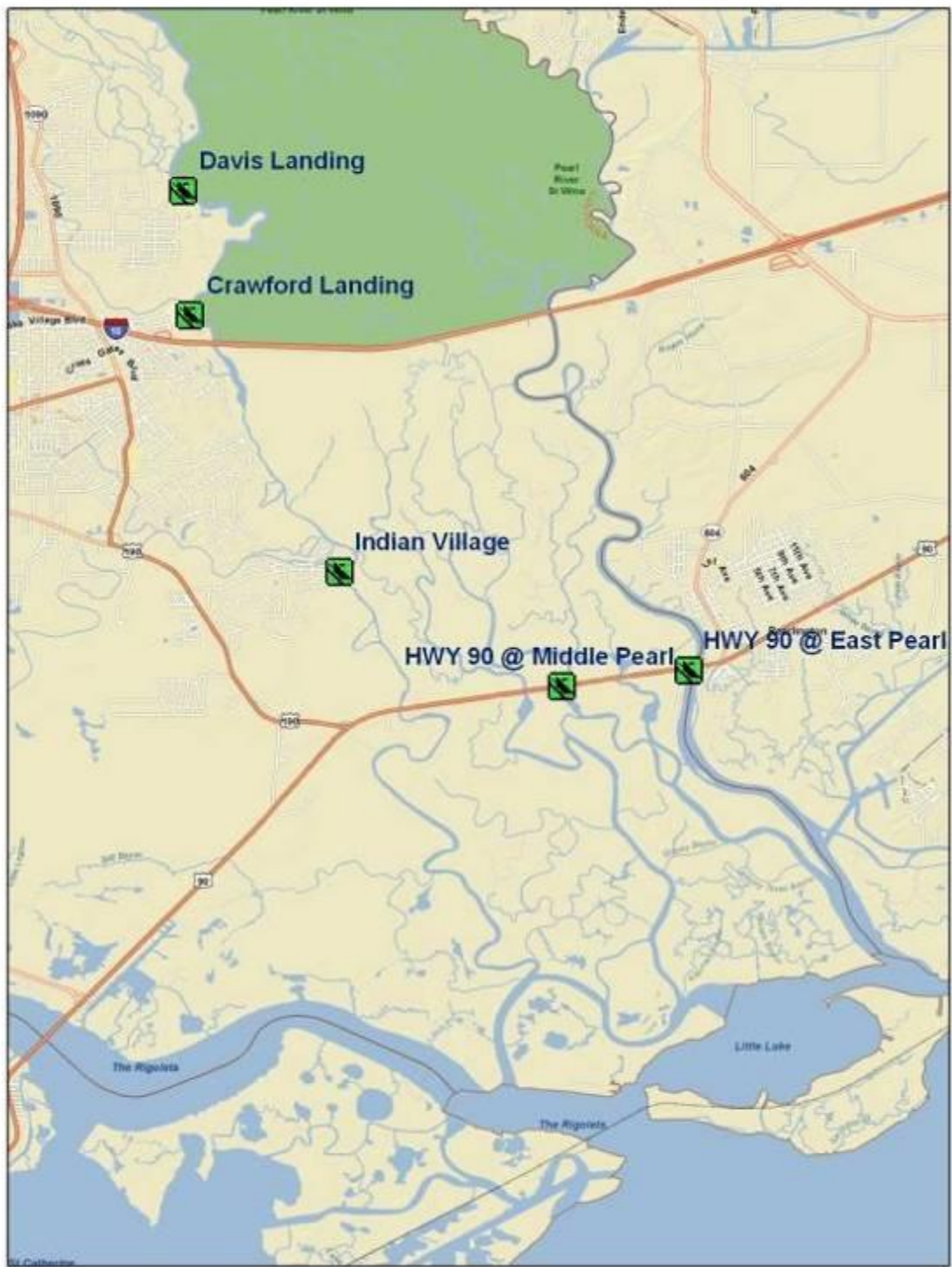


Figure 5. Location of Launches at Davis Landing, Crawford's Landing, Indian Village, Middle Pearl River, and East Pearl River

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



OFFICE OF FISHERIES INLAND FISHERIES SECTION

PEARL RIVER MONITORING PLAN 2012 - 2014

Pearl River Monitoring Plan

LDWF Inland Fisheries Section

The Louisiana Department of Wildlife and Fisheries (LDWF) will conduct a 3 year monitoring project in the Pearl River and associated waters. The project's primary objective is to monitor the recovery of native species following the August 2011 Temple-Inland kill and to identify management actions that may be necessary for a return to pre-incident conditions.

Fish population sampling

Fish population sampling for this monitoring effort will comply with LDWF standardized sampling procedures. Additional sampling will be conducted in tributaries with slight variations of sampling gear to ensure that all representative habitats are sampled. Sampling will be conducted in the normal low flow months of late summer and early fall. Seven stations have been selected for fish sampling in the Pearl River watershed (Table 1). Five of those stations are within the portion of the river that was impacted by the spill. One sampling station is located upstream from the spill impacted area. Three stations have been selected for fish samples in tributaries (Table 1).

Each main stem river station and the Bogue Chitto River tributary station will be sampled using the following gear types and techniques. For each gear listed below all fish will be collected and identified to species. Common species will be sorted to inch group. Individual lengths and weights will be recorded for rare species and species of concern (Table 2).

- 1.) **Boat Electrofishing**: 900 second samples, randomly chosen shoreline within 500 meters (m) of station GPS location, conducted in downstream manner while speed not exceeding the river flow rate, 3/16 mesh dip net
- 2.) **Hoopnets**: Four feet (ft.) hoops, 1.5" mesh, 15ft in length, #15 tarred twine, 2 throats, no lead, no bait, three nets per station, set for 72 hours
- 3.) **Seines**: Standard 25 ft X 6 ft X 3/16" mesh with 6 ft bag, 2 hauls per site, after dark when possible

Each tributary station will be sampled after dark with either a 10 ft. X 6 ft. X 3/16" mesh seine or a 20 ft. X 6 ft. X 3/16" mesh seine. Seine hauls will be made within 100 m of the established station GPS location. All fish collected will be identified to species. Common species will be sorted to inch group. Individual lengths and weights will be recorded for rare species and species of concern (Table 2).

Table 1. Pearl River Fish Monitoring Stations

Site	Latitude	Longitude	Main River Sample	Tributary Sample
PRFK 1	30 47 08.1	-89 49 09.6	X	
PRFK 2	30 43 16.0	-89 50 27.1	X	
PRFK 3	30 36 42.8	-89 49 20.2	X	
PRFK 4	30 31 28.3	-89 48 28.9	X	
PRFK 5	30 28 21.8	-89 46 42.0	X	
PRFK 6	30 22 34.0	-89 43 49.3	X	

BogueChitto1	30 37 23.9	-89 52 34.6	X	
Pushepatapa Creek	30 51 54.3	-89 48 46.9		X
Bogalusa Creek	30 46 10.6	-89 53 29.2		X
Cryer Slough	30 32 20.6	-89 49 39.5		X

Table 2. Pearl Basin Freshwater Fish Species of Concern (LDWF 2005)

Common Name	Scientific Name
Gulf sturgeon	<i>Acipenser oxyrinchus</i>
Paddlefish	<i>Polyodon spathula</i>
Alabama shad	<i>Alosa alabamiae</i>
Flagfin shiner	<i>Pteronotropis signipinnis</i>
Bluenose shiner	<i>Pteronotropis welaka</i>
Longjaw minnow	<i>Ericymba amplamala</i>
River Redhorse	<i>Moxostoma carinatum</i>
Southeastern Blue sucker	<i>Cycleptus meridionalis</i>
Frecklebelly madtom	<i>Noturus minutus</i>
Crystal darter	<i>Crystallaria asprella</i>
Channel darter	<i>Percina copelandi</i>
Freckled darter	<i>Percina lenticula</i>
Pearl darter	<i>Percina aurora</i>
Gulf logperch	<i>Percina suttkusi</i>

Freshwater Mussel Sampling

Mussel population sampling for this effort will be consistent with a protocol previously established by Louisiana State University (Brown et al. 2010) - see detailed sampling protocol below. Sampling will be conducted annually from late summer to early fall to coincide with the normal period of low flow. A total of eight stations have been selected for monitoring (Table3). Six of these stations were sampled in 2007, three of which were sampled again in 2011 (Table 3). These stations are within the area impacted by the Temple-Inland kill from Bogalusa to the Interstate-59 overpass. Two additional sites were selected in areas of the river that were not impacted by the Temple-Inland kill. One of those is located upstream from the affected area. The other is located in the Bogue Chitto River, downstream of the low head sill.

The majority of dead mussels observed during the Temple-Inland kill were the same species, *Leptodea fragilis*. This species and other thin-shelled mussels have a low relative abundance in comparison to other mussel species found in the Pearl River (Miller, A.C. and Payne 1997). In 2007, thin-shelled species accounted for only 4.32 percent of mussels sampled (Brown et al. 2010).

Additional samples at all sites in depths >1 meter will be collected in an effort to expand the understanding of mussel habitat and species community composition. Additional sampling will be conducted if the threatened inflated heelsplitter (*Potamilus inflatus*) or other species of conservation concern are encountered (Table 4). In addition, the location, photographs, and measurements of total shell length will be recorded for each these mussels observed during sampling.

Analysis of these data will include: mortality (% of the individuals collected dead), catch per unit effort (total number of mussels collected per site in 90 minutes), species richness, and Shannon Wiener Diversity Index (H').

Sampling Protocol

Timed qualitative searches, consistent with protocol conducted by Louisiana State University (Brown et al. 2010) before and after the Temple-Inland kill will be performed at each established sample site. A ninety person-minute sample will be conducted at each site where biologists will work along the littoral zones (<1 m depth) locating mussels by tactile search, retrieving both living mussels and shell. All collected mussels will be identified to species level. Additional samples will be conducted in water >1 m depth adjacent to samples taken in the littoral zone at all sites. Biologists will utilize SCUBA equipment for these samples. At each site, water quality parameters will be collected, which include water temperature, conductivity, salinity, turbidity, P.H. and dissolved oxygen.

Table 3. Freshwater Mussel Monitoring Sites

Site	Latitude	Longitude	2007	2011	New	>1 m depth
111	30 23 53.9	89 43 20.5	X	X		X
113	30 28 27.9	89 46 46.16	X	X		X
114	30 25 46.4	89 44 21.4	X	X		X
123	30 31 07.4	89 48 13.6	X			X
130	30 36 13.7	89 49 20.2	X			X
143	30 43 30.3	89 50 22.2	X			X
150	30 46 59.0	89 49 38.3			X	X
BC	30 37 20.64	89 52 38.1			X	X

Table 4. Mussel Species of Conservation Concern (LDWF 2005)

Common Name	Scientific Name
Rayed Creekshell	<i>Anodontooides radzatus</i>
Elephant-Ear	<i>Elliptio crassidens</i>
Mississippi Pigtoe	<i>Pleurobema beadleianum</i>
Inflated Heelsplitter	<i>Potamilus inflatus</i>
Southern Rainbow	<i>Villosa vibex</i>

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Brown, K. M., W. Daniel and G. George. 2010. The effect of Hurricane Katrina on the mussel assemblage of the Pearl River, Louisiana. *Aquat. Ecol.*, 44:223-231

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APPENDIX III
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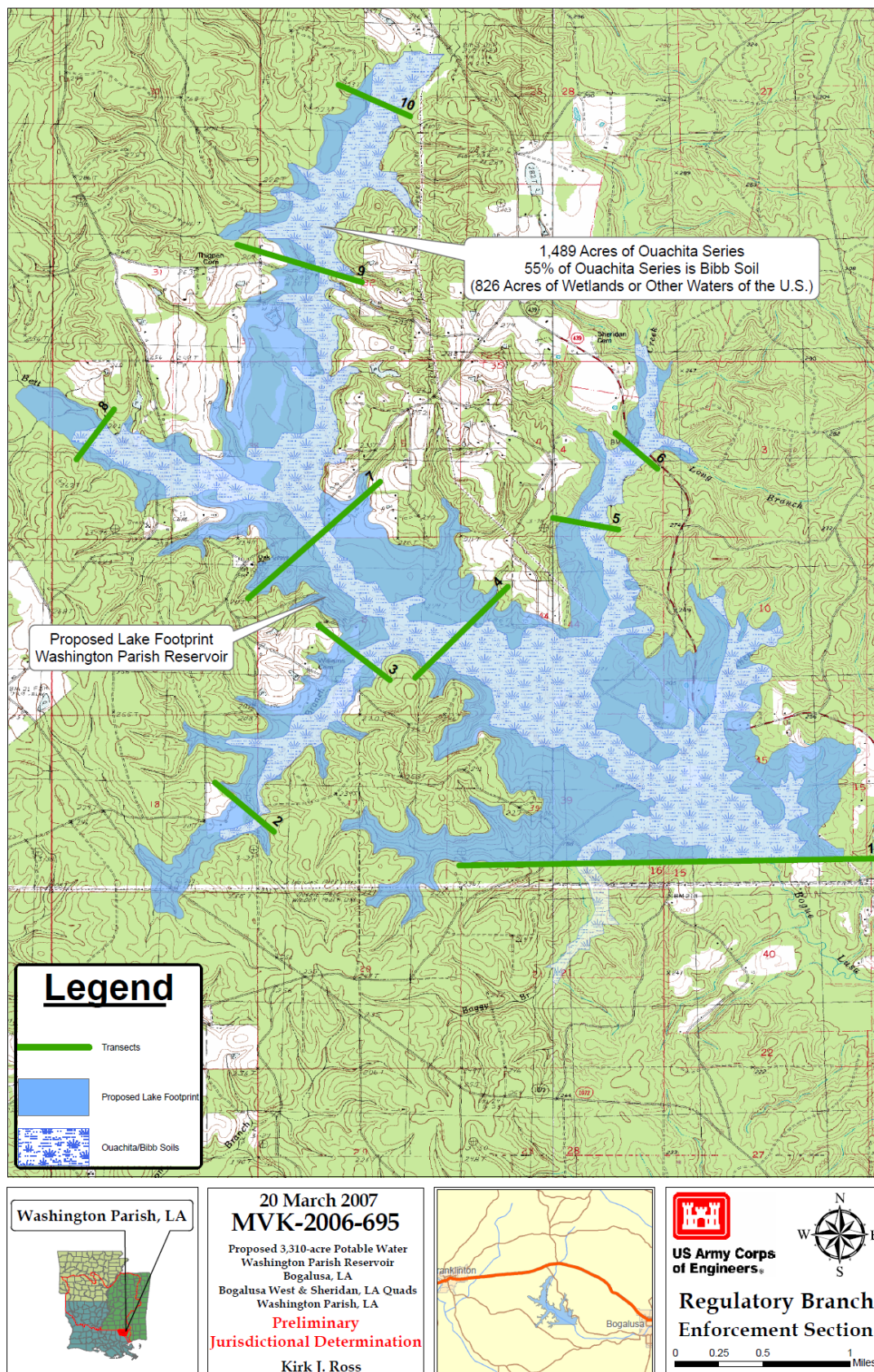


Figure 1. The proposed Washington Parish Reservoir in Bogalusa, LA.

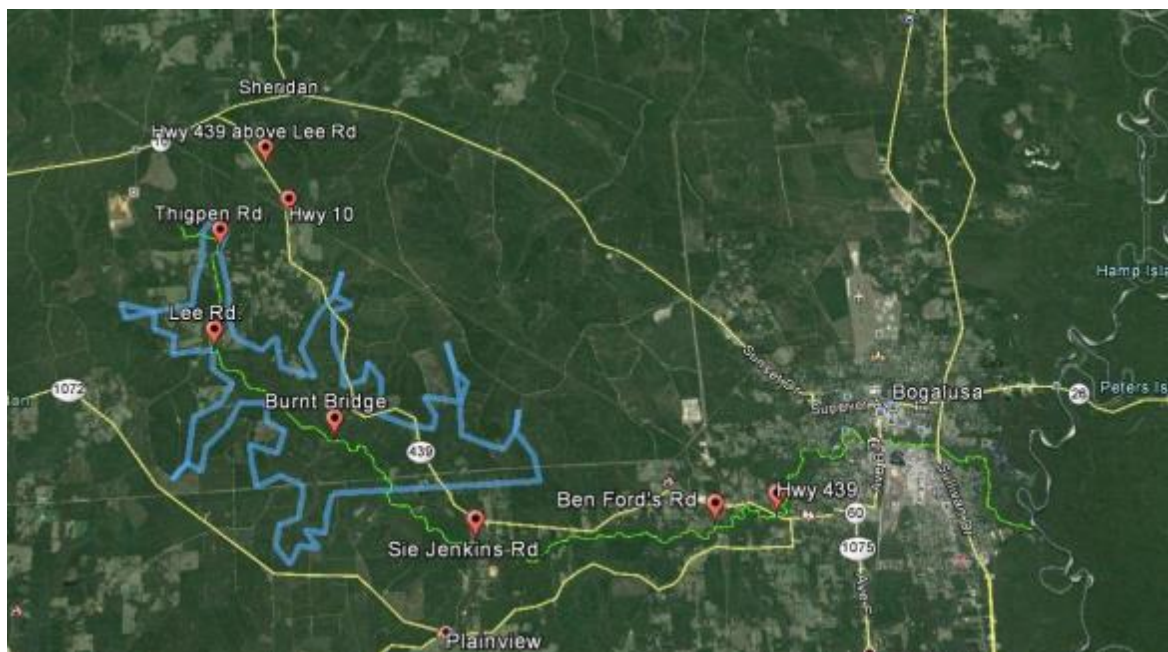


Figure 2. Location of sample sites on the Bogue Lusa Creek.